

## ABSTRACT

Improved fiber Fabry-Perot (FFP) filter configurations are provided in which at least one of the mirror-ended fiber ends forming the FFP has a concave fiber core end. The mirror at that fiber core end is thus concave. The invention provides waferless FFP configurations in which the FFP cavity is an air-gap cavity formed by two highly reflective dielectric mirrors deposited directly on optical fiber ends. The air gap cavity can be tuned using various methods to tune the filter. Use of a concave mirror at the fiber core enables filters with improved performance characteristics: including very wide FSR ( $>12000$  GHz) , very high finesse ( $>5,000$ ), and high glitch-free dynamic range (GFDR) ( $>40$ dB). The invention also provides improved wafer-based FFP fixed and tunable filters that incorporate a concave mirror at a fiber core forming the FFP cavity and a fiber (SMF) waveguide within the cavity.